Trig Final (Practice v18)
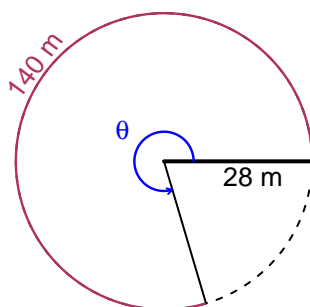
- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.
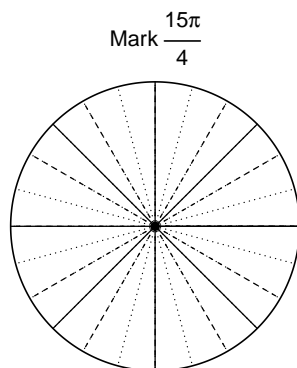
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 28 meters. The arc length is 140 meters. What is the angle measure in radians?
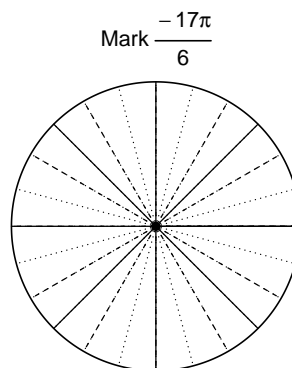

Question 2

Consider angles $\frac{15\pi}{4}$ and $\frac{-17\pi}{6}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{15\pi}{4}\right)$ and $\cos\left(\frac{-17\pi}{6}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{15\pi}{4}$

Mark $\dfrac{-17\pi}{6}$

Find sin(15π/4)

Find cos(−17π/6)

Question 3

If $\cos(\theta) = \frac{-36}{85}$, and θ is in quadrant III, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 5.39 meters, a midline at $y = -8.13$ meters, and a frequency of 2.77 Hz. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).